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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,598	09/29/2000	Jonathan C. Lueker	2207/9048	4444

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EXAMINER

WANG, TED M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 12/05/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/670,598		Applicant(s) LUEKER ET AL.	
	Examiner Ted M Wang		Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-24 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1-3, 6, 9 and 17-19 is/are rejected.

7) ☒ Claim(s) 4, 5, 7, 8, 10-16 and 20-24 is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 29 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>7</u> .	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) ____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other:
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DETAILED ACTION

1. Claims 1-24 are pending in the application.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- Reference elements 10 and 13 in Fig.1
- Reference element 20 in Fig.2
- Reference element 61e in Fig.4
- Reference element 85e in Fig.6
- Reference element 107 in Fig.7.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because **wrong reference number has been assigned to the block diagram of Fig.4. i.e. Reference element 61d should be assigned to the 4th Byte register box.** A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

- Page 7 line 17, figure number is missing.
- Claim 9 line 4, "an" should be changed to "and".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Therssen (PT5,225,787).

- In regard claim 1, Therssen discloses a sampling frequency converter with a method comprising over-sampling data transmitted at a first frequency using a clock at a second frequency to obtain groups of n samples (column 7 line 66 – column 8 line 5); storing a plurality of m of said groups of n samples (column 10 lines 38-46); outputting said plurality of in of said groups of n samples

simultaneously at a clock frequency which is said second frequency divided by m (column 8 lines 5-21).

- In regard claim 2, the limitation of using said plurality of m of said groups of n samples to detect transitions in said data; and maintaining an historical record (Fig.3 element 44) of said transitions can further be taught by Therssen in column 8 lines 14-54.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Therssen (PT5,225,787) in view of Yang et al. (Solid-State Circuits, IEEE Journal of, Volume: 33 Issue: 5, May 1998).

- In regard claim 3, Therssen discloses all limitation as described in claims 1 and 2 except specifically teaching that use historical record to determine a phase of second frequency that is nearly centered in the middle of a bit time of said data at first frequency.

Yang et al. cited by the applicant discloses a 0.5- μ m CMOS 4.0-Gbit/s serial link transceiver with Data recovery Using Oversampling with a phase-picking

algorithm to determine the middle sample within the bit boundaries that is selected as the data (page 717 section IV lines 1-46) in order to keep the total "effective jitter" below the 83-ps quantization spacing.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Therssen's method in view of Yang's disclosure in order to keep the total "effective jitter" below the 83-ps quantization spacing.

- In regard claim 6, the limitation of using historical record to select bits of data at first frequency and output bits in groups of generally m valid bits at a time at said second frequency divided by m can further be taught by Therssen in Fig.8 element 42, and column 8 lines 5-33.

9. Claims 9, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Therssen (PT5,225,787) in view of Jeong (PT6,107,946).

- In regard claim 9, Therssen discloses all limitation as described in claim 1 except specifically teaching that use n samples to detect the transitions between two logic levels in transmitted data and provide n edge results which are at one logic level to indicate a transition and the other logic level to indicate no transition. All other limitation is contained in claims 1. The explanation of all the limitation is already addressed in the above paragraph.

Jeong discloses a high speed serial link for fully duplexed data communication with use n samples to detect the transitions between two logic levels in transmitted data and provide n edge results which are at one logic level to indicate a transition and the other logic level to indicate no transition (column 14

lines 30-63, and column 15 lines 32-33, and column 16 lines 3-63, and Fig.10 element 220) in order to supply the differential data output signal.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Therssen's method in view of Jeong's disclosure in order to supply the differential data output signal.

- In regard claim 17, which is an apparatus claim related to claim 1, the limitation of the n sampling clock inputs each at a second frequency but different phase each clock shifted in phase from an adjacent clock by $360/n$ degrees can further be taught by Jeong in column 5 lines 22-28 in order to supply a much higher speed clock for clock recovery. All other limitation is contained in claims 1. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 18, which is a apparatus claim related to claim 9, the limitation of further including an edge detector to detect the transition of the clock can further be taught by Jeong in column 13 lines 10-28 and Fig.10 element 210. All other limitation is contained in claims 1. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 19, the limitation of edge detectors comprise a plurality of XOR gates can further be taught by Jeong in Fig.20 elements 261 and column 16 lines 30-33. Note that the FA (Full adder) is a combinational logic of AND, OR, and XOR.

Allowable Subject Matter

10. Claims 4, 5, 7, 8, 10-16, and 20-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Reference 5,812,207, and 5,619,202, and an 800 Mbps multi-channel CMOS serial link with 3× oversampling Sungjoon Kim; Kyeongho Lee; Deog-Kyoon Jeong; Lee, D.D.; Nowatzky, A.G.; Custom Integrated Circuits Conference, 1995. Proceedings of the IEEE 1995, 1-4 May 1995 are cited because they are put pertinent to the method and apparatus for supporting variable sampling rate. However, none of references teach detailed connection as recited in claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M Wang whose telephone number is (703) 305-0373. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

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Ted M Wang
Examiner
Art Unit 2634

Ted M. Wang



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
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